What is Claimed is:

1. A method for cycling a switch between an ON-time portion and an OFF-time portion to provide power to a load, said method comprising:

comparing a current level being conducted through the switch to a reference current level to control said ON-time portion;

comparing a voltage level of a node of the switch to a reference voltage level to control said OFF-time portion; and

cycling between the ON-time portion and the OFF-time portion to provide power to the load.

2. The method of claim 1, the cycling being based on (1) the current comparison and (2) the voltage comparison.

3. The method of claim 1, further comprising:

delivering power to the load by cycling between the ON-time portion and the OFF-time portion of the switch.

4. The method of claim 3, further comprising:

ceasing delivery of power when the voltage of the load is equal to, or greater than, a predetermined voltage level.

5. The method of claim 1, wherein the switch toggles from the ON-time portion to the OFF-time

portion when the current level is equal to, or greater than, the reference current level.

6. The method of claim 1, wherein the switch toggles from the OFF-time portion to the ON-time portion when the voltage level is equal to, or less than, the reference voltage level.

7. A charging circuit that cycles a switch between an ON-time portion and an OFF-time portion to charge a load, said circuit comprising:

ON-time circuitry that compares a current level being conducted through the switch to a reference current level to control the ON-time portion;

OFF-time circuitry that compares a voltage level being applied to a node of the switch to a reference voltage level to control the OFF-time portion; and

latch circuitry that cycles the switch between the ON-time portion and the OFF-time portion to provide power to the capacitor.

8. The charging circuit of claim 7, wherein the latch circuitry toggles the switch ON and OFF based on the outputs of the ON-time circuitry and the OFF-time circuitry.

9. The charging circuit of claim 7, further comprising:

a power source;

a transformer coupled to the power source and the switch; and

wherein the cycling between the ON-time portion and the OFF-time portion of the switch transfers power from the power source to the load via the transformer.

10. The charging circuit of claim 7, further comprising measuring circuitry that is coupled to the switch and that measures the output voltage of the load.

11. The charging circuit of claim 10, further comprising:

control circuitry that is coupled to the measuring circuitry and that disables the switch when the output voltage of the load is at, or greater than, a predetermined voltage level.

12. A method for charging a capacitor to a predetermined voltage, said method using a capacitor charging circuit that transfers power to the capacitor through a transformer, said method comprising:

delivering power to the capacitor, wherein power delivery is performed by cycling between (1) providing power to the transformer until current being provided to the transformer is equal to, or greater than, a predetermined reference current and (2) delivering power to the capacitor until the voltage across the transformer is equal to, or less than, a predetermined reference voltage;

measuring the voltage level of the capacitor; and

terminating power delivery in response to determining that the voltage level is equal to, or greater than, the predetermined voltage.

13. The method of claim 12, the delivering power comprises:

toggling a switch ON and OFF;

providing current to the transformer when the switch is ON; and

using the current in the transformer to charge the capacitor when the switch is OFF.

14. The method of claim 13, further comprising:

using the current being provided to the transformer to determine an ON-time portion of a power delivery switching cycle; and

using the voltage across the transformer to determine an OFF-time portion of the power delivery switching cycle.

15. The method of claim 12, the delivering power to the capacitor comprises:

conducting a current through a switch when the switch is ON;

monitoring the current through the switch;

toggling the switch OFF when the current being conducted through the switch is equal to, or greater than, the predetermined reference current;

monitoring a voltage applied to the switch when the switch is OFF; and

toggling the switch ON when the voltage is equal to, or less than, the predetermined reference voltage.

16. A capacitor charging circuit that charges a capacitor to a predetermined output voltage by transferring power through a transformer, said capacitor charging circuit comprising:

power delivery circuitry that delivers power to the capacitor by cycling between (1) providing power to the transformer until current being provided to the transformer is equal to, or greater than, a predetermined reference current and (2) delivering power to the capacitor until the voltage across the transformer is equal to, or less than, a predetermined reference voltage;

measuring circuitry coupled to the power delivery circuitry and that measures the output voltage level of the capacitor; and

control circuitry that is coupled to the measuring circuitry and that disables the power delivery circuitry when the measuring circuitry determines that the output voltage level of the capacitor is at, or greater than, the predetermined output voltage.

17. The capacitor charging circuit of claim 16, the power delivery circuitry comprising:

a switch;

ON-time circuitry that is coupled to a first node of the switch;

OFF-time circuitry that is coupled to a second node of the switch; and

a latch that is coupled to a third node of the switch and is further coupled to receive the outputs of the ON-time circuitry and the OFF-time circuitry, the latch cycles the switch ON and OFF based on the outputs of the ON-time circuitry and the OFF-time circuitry.

18. The capacitor charging circuit of claim 17, wherein the measuring circuitry determines the output voltage of the capacitor based on a voltage level at the second node of the switch when the switch is OFF.

19. The capacitor charging circuit of claim 17, wherein the ON-time circuitry sets an ON-time portion of a switching cycle in the power delivery circuitry based on a current being conducted by the switch.

20. The capacitor charging circuit of claim 17, wherein the OFF-time circuitry sets the OFF-time portion of a switching cycle in the power delivery circuitry based on a voltage level at the second node of the switch.

21. The charging circuit of claim of claim 16, wherein the power delivery circuitry is coupled to a transformer, the transformer serving as the medium that enables the power delivery circuitry to deliver power to the load.